

Claim 7 is directed to a process for fabricating active and passive polymer-based components for use in integrated optics. Specifically, claim 7 is directed to a process including:

*depositing onto an optoelectronic component at least one patternable polymer resist layer that is highly sensitive and that effects an intense polymerization when exposed;*

*filling unexposed regions of the at least one patternable resist layer with organometallic compounds arranged in a monomer form, the organometallic compounds being suitable for filling an already existing pattern of the at least one patternable polymer resist layer and for breaking up and repatterning the already existing pattern, wherein an optical property of the optoelectronic component is capable of being selectively changed as a function of a type of the monomeric organometallic compounds and as a function of a temperature and an application time, the filling of the unexposed regions of the at least one patternable resist layer occurring, through one of the gas-phase diffusion and the liquid-phase diffusion and with an application of heat, from a surface of the unexposed regions through the etching mask, and occurring from the side surfaces uncovered by the deep etching.*

In contrast, the Brenner reference purportedly concerns a three-dimensional optics system employing polymethyl methacrylate (PMMA) as a substrate material. The Brenner reference focuses on an integration method for passive microoptical components based on deep proton irradiation. (See Brenner reference, page 161). The Brenner reference does not describe or suggest filling the unexposed regions of the at least one patternable resist layer with organometallic compounds where the optoelectronic component is capable of being selectively changed as a function of the type of the monomeric organometallic compounds and as a function of temperature and application time.

In fact, as described above, the Brenner reference concerns a different purpose – building an optics device for three dimensional etching – and does not describe or suggest a process for fabricating active and passive polymer-based components for use in integrated optics using organometallic compounds as in claim 7.

The Office Action refers to pages 159, 161 and 162 of the Brenner reference for support of its position. The Brenner reference at page 159 refers to using polymethyl methacrylate as a substrate material and integrating microoptical components to three-dimensional systems. The Brenner reference at pages 161 to 162 refers to an integration method for passive microoptical components in one substrate based on deep proton irradiation. The Brenner reference further mentions a fabrication of microcomponents for light deflection and light collimation by an irradiation of polymethyl methacrylate with a high energy proton beam. The Brenner reference also mentions that if irradiate domains are removed with a special solvent, deflecting elements can be generated. The Brenner reference further mentions that slits can be generated in the polymethyl methacrylate if the polymethyl methacrylate is irradiated with protons and a subsequent removal of the irradiated domains.

The Brenner reference at pages 159, 161 and 162, does not describe or suggest a fabrication of active and passive polymer-based component for use in integrated optics using organometallic compounds, nor does it describe or suggest filling the unexposed regions of the at least one patternable resist layer with organometallic compounds where the optoelectronic component is capable of being selectively changed as a function of the type of the monomeric organometallic compounds and as a function of temperature and application time.

The Eguchi reference does not cure the deficiencies of the Brenner reference. The Eguchi reference refers to fabricating gradient index polymer optical waveguides having patterns, simultaneous formation of the core and cladding, and relatively high refractive index differences so that any excess loss caused by difference in core shapes on connection to optical fibers is reduced. Further, the Eguchi reference refers to monomers with a low refractive index which are diffused into a gel containing barium ion patterned by uv irradiation and then the diffusion profile is fixed by thermal polymerization.

The Vollenbroek reference does not cure the deficiencies of the Brenner reference and the Eguchi reference, alone or in combination. The Vollenbroek reference refers to a method for manufacturing a semiconductor device by applying a photosensitive lacquer layer to a substrate. During a first irradiation, a top layer of the substrate is locally discolored, the discolored portion being used as a mask during a second irradiation, thus avoiding wet development of the top layer.

Accordingly, none of the references, alone or in combination, describe or suggest a

method for fabricating active and passive polymer-based components for use in integrated optics using organometallic compounds, nor do they, alone or in combination, describe or suggest filling the unexposed regions of the at least one patternable resist layer with organometallic compounds where the optoelectronic component is capable of being selectively changed as a function of the type of the monomeric organometallic compounds and as a function of temperature and application time, as in claim 7. It is therefore respectfully submitted that claim 7 is allowable.

Since claims 8 to 14 depend from claim 7, they are thus allowable for at least the same reasons.

Moreover, to reject a claim as obvious under 35 U.S.C. § 103(a), the prior art must describe or suggest each claim element and it must also provide a motivation or suggestion for modifying the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), also make plain that a subjective "obvious to try" standard is not proper. In particular, the Court in the case of In re Fine stated that:

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted). In short, there must be evidence of why a person having ordinary skill in the art would be motivated to modify a reference to provide the claimed subject matter of the claims.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not even the case here, there still must be some finding as to the "specific understanding or principle within the

knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed", stating that:

*In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.*

(See In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Federal Circuit 2000) (italics added)). Here again, there have been no such findings.

It is therefore respectfully submitted that the claims rejected as obvious are allowable over the references relied upon.

It is respectfully submitted that even if it were proper to combine the references as suggested (even though it is respectfully believed that it is not proper to do so), the secondary Eguchi reference and Vollenbroeck reference do not cure the deficiencies of the Brenner reference (as explained above) with respect to claim 7 and its subsequent dependent claims. It is therefore respectfully submitted that claims 7 to 14 are allowable for the foregoing reasons.

### **CONCLUSION**

In view of all of the above, it is believed that any objections and rejections have been obviated, and that claims 7 to 14 are allowable. It is therefore respectfully requested that the objection and rejection be withdrawn, and that the present application issue as early as possible.

If for any reason the Examiner believes that contact with Applicants' attorney would advance the prosecution of this application, he or she is invited to contact the undersigned at the number given below.

Respectfully submitted,

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